## REMARKS

The Examiner rejected Claim 7 under 35 U.S.C. 112, second paragraph. In particular, the Examiner stated that in Claim 7, at line 4, the term "said stripes" does not specifically state which stripes are illuminated. According to the Examiner, it should be stated whether stripes of the first track or the second track should be illuminated. Also, in Claim 7, at line 7, the Examiner stated that the term "said photodetector" should specify whether "first photodetector" or "second photodetector" is used. The above amendments to Claim 7 provide the required changes.

The Examiner rejected Claims 1 and 5 under 35 U.S.C. 102(e) as being anticipated by Rothamel (US 6,639,206). Applicant submits that Claims 1 and 5 as amended above are not anticipated by Rothamel.

The Examiner points to Figure 1 of Rothamel as teaching an encoder that meets the limitations of the claims. The encoders taught in that figure utilize flat mirrors that are arranged around the surface of the drum. Such mirrors are not a portion of a circular cylindrical surface. Furthermore, none of the embodiments taught in Rothamel utilize reflective stripes that are part of the drum surface.

In addition, it should be noted that Rothamel teaches that the light source focuses the light onto the mirrors. That is, the light source includes a lens that images the light source onto the mirror. Hence, the mirror could not form an image of the light source on the photodetector.

The Examiner rejected Claim 2 under 35 U.S.C. 103(a) as being unpatentable over Rothamel in view of Chen (US 6,817,528). Applicant submits that Claim 2 as amended above is not obvious in view of Chen.

In making this rejection, the Examiner stated that Rothamel teaches the claimed invention with the exception of teaching that the light source emits a collimated beam of light. The Examiner looks to Chen for the teaching of such a collimated source. The Examiner maintains that it would be obvious to use the collimated light source in the encoder

of Rothamel because the resultant light source would maintain alignment of the active light area with the photodetector during drum rotation.

Applicant must point out that Rothamel specifically teaches that the light source focuses the light from the source onto the surface of the mirror. The scheme taught in Rothamel depends on the focusing of the light on the mirror. Hence, there is no reasonable expectation of success in making the combination suggested by the Examiner.

The Examiner rejected Claims 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over Rothamel in view of Suganuma (US 6,448,996). Applicant submits that these claims as amended above are not obvious in view of these references. Applicant repeats the arguments made above with respect to the missing teachings in Rothamel. Suganuma does not provide the missing teachings.

The Examiner rejected Claim 6 under 35 U.S.C. 103(a) as being unpatentable over Rothamel. Applicant submits that Claim 6, as amended above, is not obvious in view of Rothamel. Applicant repeats the arguments made above with respect to the missing teachings in Rothamel.

The Examiner admits that Rothamel does not disclose that said first track lies between a cylindrical surface and said axis. The Examiner maintains that it would have been obvious to one skilled in the art to rearrange the components of the encoder by placing the encoder tracks between the cylindrical surface and said axis for the purpose of providing a more compact design. The Examiner has not pointed to any such suggestion in the references.

The Examiner rejected Claim 7 under 35 U.S.C. 103(a) as being unpatentable over Rothamel in view of Karim-Panahi (US 5,438,882). Applicant submits that Claim 7 as amended above is not obvious in view of these references. Applicant repeats the arguments made above with reference to the missing teachings in Rothamel. Karim-Panahi does not provide the missing teachings.

The Examiner rejected Claim 8 under 35 U.S.C. 103(a) as being unpatentable over Rothamel in view of Karim-Panahi and Cohen (US 4,124,839). Applicant submits that Claim

8 as amended above is not obvious in view of these references. Applicant repeats the arguments made above with reference to the missing teachings in Rothamel and Karim-Panahi.

Regarding Claim 8, the Examiner admits that Rothamel and Karim-Panahi do not teach a drum comprising two tracks where the widths of the stripes of the first track are different from the widths of the stripes of the second track. The Examiner looks to Cohen for the teaching of multiple tracks with different width reflective stripes. The Examiner states that one would be motivated to use the tracks of Cohen in a system based on the combined teachings of Rothamel and Karim-Panahi to provide additional encoding data. Applicant must disagree.

In making this rejection, the Examiner looks to tracks 4 and 4' in Karim-Panahi as the first and second tracks. Applicant must point out that the scheme taught in Karim-Panahi is designed to measure the torque on a shaft by measuring the phase shift of the signals produced by the two tracks. As such, the tracks must have the same widths so that they produce signals of the same frequency. Hence, utilizing the different spacings suggested by Cohen would lead to an inoperative device. The Examiner argues that Karim-Panahi does not require the tracks to have bands of the same width. Applicant disagrees. The scheme taught in Karim-Panahi measures a phase shift related to the torque, and hence the two signals must be the same when there is no torque. Hence, even if the tracks have uneven spacings, the spacing pattern must be the same.

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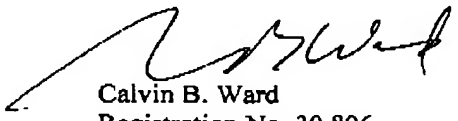
Respectfully Submitted,



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